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ABSTRACT

Certain aspects of a school environment can be stressful for students. The School Situation Survey (SSS) was developed to assess school-related stress among students in grades 3 through 12. The seven scales of the SSS assess four sources of stress (Teacher Interactions, Academic Stress, Peer Interactions, Academic Self-Concept) and three manifestations of stress (Emotional, Behavioral, Physiological). A pilot form of the survey was administered to 907 fifth-, seventh-, and ninth-graders and a revised form was administered to 1,111 students in these grades. To date, the SSS has been administered to over 7,000 students in grades 3 through 12 in 16 Connecticut and Rhode Island school districts representing rural, suburban, and urban districts. Normative information is available by total group, grade-level cluster, and gender. Reliabilities are considered moderate to high; test-retest data support the stability of the perceptions of stress levels over time. Teachers and school support staff can help students to cope with stress by enabling them to learn to make friends and to learn to identify and deal with different types of stress. Teachers and staff can also help students to deal with stress by informing them of possible stressful situations before they are encountered. (NB)

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# Assessing and Dealing with School-Related Stress in Grades 3-12 Students[1]

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## Introduction

Certain aspects of a school environment can be stressful for students. Stress, tension, or anxiety can arise from situations that threaten, or that are perceived to threaten a student's self-esteem, security, safety, or way of life (Chandler, 1981a; Schultz, 1980). While some degree of stress is important for growth and functioning, it can become debilitating when it is carried to an extreme (Chandler, 1981a, 1981b; Moore, 1975; Selye, 1974).

The ways in which parents and teachers treat both the sources of stress and the students' reactions to them can profoundly affect the coping behaviors adopted by the students. To help them cope, it seems necessary first to identify the sources of stress and then to recognize the ways in which stress is manifested in the school environment.

The objectives of this paper are to:

- describe the rationale for and development of an instrument to assess school-related stress.
- discuss strategies for reducing student school-related stress.
- discuss the importance of teachers' knowledge of stressful situations.

## Rationale

School makes up a significant part of a student's life since approximately one-third of a student's waking hours is spent in

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school. Considerable demands, both academic and social, are placed on students by the school, parents, teachers and peers, and these may become sources of stress. When confronted with a school event, students assign meaning to it - either positive or negative -and respond accordingly. Events assessed by students as threatening are often stressful and result in manifestations of school-related psychological stress. The way students learn to cope with stress can have an important effect on their growth. When they fail to learn effective and appropriate coping skills, they internalize blame, and this may result in poor self-concept.

Sources of Stress. Phillips (1978) has described the "official curriculum" and the "hidden curriculum," in which the official curriculum refers to standardized classroom activities, student-to-teacher ratio, the evaluation process, and the division of power and authority (e.g., students are powerless, teachers are powerful); the hidden curriculum refers to the social organization of cliques, students' social interactions, and other factors. Both contribute substantially to the student's total school experience and present occasion for stress. Teachers can create a particular atmosphere which may be stressful to some children. The way in which a teacher relates to their students as a whole and as individuals can influence students' views of themselves and one another. For example, a teacher can provide encouragement simply by smiling or saying something positive when a student has performed well. When a studenhas difficulty, a teacher can offer some help or suggestions (Asher,1982).

Manifestations of Stress. Students who are highly anxious tend to engage in more problem behavior than those who are not, area more disliked by their peers, and have poorer self-concepts and lower school achievement (Forman & O'Malley, 1984). Students' school work almost always suffers when their school lives become stressful. Too many stressed youngsters have stopped believing in their own worth or in the worth of others. Mental health seems to be consistently achieved when students have lasting, emotionally close relationships with one or more caring adults. The relationship may be with parents, but it may also be with teachers (Brenner, 1984). Reed (1984) suggests that teachers need to "validate" pupils by giving them the feeling that they are doing their best.

A situation or event perceived as stressful by an individual is accompanies by a response that may be emotional, behavioral, or physiological (Elliot & Eisdorfer, 1982; Spring & Coons, 1982). When students are confronted with stressful events with which they are unable to cope effectively, they experience a sense of hopelessness and insecurity (Sieman, 1978). These reactions may lead to emotional problems and maladaptive behavior. Although students' fears and anxieties are just as threatening as those of adults, they may be more debilitating because of the inability of students to understand then their bodies are reacting to stress. Further, they may become sarcastic and verbally attack their peers or talk back to their teachers. They may also display aggressive behavior or inattentiveness in class. Other symptoms include difficulty in concentrating, chronic fatigue, headache, and abdominal pain unrelated to illness.

When a student's inability to cope goes unnoticed, when stress in not recognized and a student is punished as a result of the acting out of negative stress-related behaviors, a vicious cycle is set into motion that has serious consequences for physical, intellectual, and emotional development.

The generally consistent findings of research conducted by the authors resulted in a model of school-related stress and an instrument designed to assess it. This instrument, the School Situation Survey (SSS), is appropriate for students in grades three through twelve and is constructed of seven scales: four scales which assess school-related sources of stress and three scales which assess manifestations of stress in the school environment. These scales are defined as follows:

Sources of Stress

- Teacher Interactions assesses students' perceptions of their teachers' attitudes toward them (6 items; i.e., "I feel that some of my teachers don't really care about what I think or how I feel.")
- Academic Stress assesses situations that relate to academic performance or achievement (3 items; i.e., "I am afraid of getting poor grades.")
- Peer Interactions assesses students' social interactions or their perceptions of their classmates' feelings toward them (6 items; i.e., "Other students make fun of me.")
- Academic Self-Concept assesses students' feelings of self- worth, self-esteem, or self-concept relevant to perceived academic ability (4 items; i.e., "I do good work in school.")

Manifestations of Stress

- Emotional assesses feelings such as fear, shyness, and loneliness (6 items; i.e., "I feel upset.")
- Behavioral assesses actions, reactions or behaviors toward others, such as striking out or being hurtful or disrespectful (6 items; i.e., "I talk back to my teachers.")
- Physiological assesses physical reactions or functions such as nausea, tremors, or rapid heart beat (3 items; i.e., "I feel sick to my stomach.")

## Development of the School Situation Survey

Item Development. The initial development of the SSS involved a review of the literature on school-related student stress to ascertain potential sources and manifestations, including a review of the work of Schultz (1980), Schultz and Heuchert (1983), Sarason (1975, 1978), and Chandler (1981a, 1981b, 1982). Additionally, nine students, six parents, seven teachers, two school psychologists, two child development specialists, and three stress researchers were asked to describe school situations that they considered stressful for students. The resulting categories of stressors for school-children were used as the basis for developing the Sources of Stress scales, while generic categories representing responses to stress were used to generate scales for the Manifestations of Stress dimension. Eight to ten items were generated for each category, after which items and categories were formally reviewed by a panel of judges.

Because stress has been conceptualized as a continuous variable representing various levels ranging from low stress to high stress, items are measured on a 5-point Likert scale. The frequency dimension ranges from Never to Always (i.e., 1=Never, 2=Rarely, 3=Sometimes, 4=Often, 5=Always) so that students respond to items by indicating the frequency with which the item is applicable to them. A high degree of stress in reflected by high scores on the scales. For example, a scale average of 5 on the Academic Self-Concept scale indicates a poor self-concept.

Administration and Data Analysis of the Pilot Form. A pilot form of the survey was subsequently administered to a sample of 907 fifth-, seventh-, and ninth-grade students from three different school systems. The data from this sample were submitted to principal component factor analyses followed by oblique rotation to examine construct validity in relation to the rationally-derived categories identified in the content validation. The 33 Sources of Stress items were analyzed separately from the 21 Manifestations of Stress items. Items indicative of low stress were reverse scored so that high scores would uniformly represent high levels of stress. Because the factor structures were similar across grade levels, the total group analyses were used in developing the SSS.

Five factors containing 20 items replicated the original Source categories posited in the content validation: Teacher Interactions, Academic Stress, Peer Interactions, Academic Self-Concept, and Perceived Control. The analysis of the Manifestations of Stress items resulted in three factors which replicated the original three Manifestations categories: Emotional, Behavioral, Physiological.

Alpha internal consistency reliability coefficients were generated for the Sources of Stress and Manifestations of Stress dimensions, and ranged from .30 to .77 for the Sources of Stress and from .62 to .87 for the Manifestations of Stress. Based on these analyses a revised form of the SSS contained 18 new items for the Sources of Stress scales and six for the Manifestations of Stress scales.

Administration and Data Analysis of the Revised Form. The revised 56-item form of the SSS was administered to a new sample of 1,111 fifth-, seventh-, and ninth-grade students from four school

districts. The administration and data analysis utilized in the initial pilot were replicated for this new group to examine the validity of the rationally derived categories and empirically derived constructs.

The four Source factors were defined by a total of 19 items representing the operational definitions of the Teacher Interactions, Academic Stress, Peer Interactions, and Academic Self-Concept scales for the Sources of Stress dimensions of the final form of the SSS. The Perceived Control items did not contribute to the definition of a meaningful factor and were deleted. The data from the Manifestations of Stress items yielded three factors which replicated the original constructs (Emotional, Behavioral, and Physiological) and were defined by 15 items.

Scale Intercorrelations. While the factors derived from the factor analytic techniques used for the preliminary studies were considered to be fairly independent, it is important to examine the relationships among the scales, formed by summing the items that define each factor. With two exceptions, the correlations among the SSS scales are low. A correlation of .56 was found between the Physiological and Emotional scales of the Manifestations of Stress dimensions; the Teacher Interactions scale correlated .50 with the Behavioral scale.

Reliability

Internal Consistency. Alpha coefficients were generated for the SSS scales derived from the item level factor analyses. Table 1 shows the reliabilities for the total composite sample of 7,036 students as well as for the grade-level clusters (grades 3-5, N=567; grades 6-8, N=2,531; grade 9, N=2,331; and grades 10-12, N=1,607). These

reliabilities are considered moderate to high given the fact that the SSS is an affective measure and that the reliabilities support the appropriate sampling of items from each content domain (Gable, 1986; Nunnally, 1978).

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Insert Table 1 Here

Test-Retest. Test-retest data obtained from a sample of 621 seventh- to ninth-grade students are reported in Table 2. The interval between administrations was three weeks. Reliabilities ranged from .61 for the Physiological scale to .71 for the Teacher Interactions scale. Since the SSS measures affect, which is more variable or personal state dependent than other aspects of the individual, these data are supportive of the stability of the perceptions of stress levels over time.

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Insert Table 2 Here

Validity

Validity consists of evidence that a scale measures that it purports to measure. The design of validity studies for the SSS is based upon arguments for validity that require both rational (or judgmental) and empirical (Gable, 1986) evidence. The rational evidence, gathered before administration of the pilot form, consisted of examining the adequacy of the operational definitions of the stressors used for writing the items against definitions of stressors based on the literature. Empirical evidence was considered after administration of the revised form of the instrument. Thus, relationships among the items as well as relationships to an instrument measuring similar constructs were examined in light of the

underlying theoretical constructs.

Content Validity. Content validity addresses the question, To what extent to the items of an instrument adequately sample from the intended content domain? For the SSS, this question was addressed by gathering judgments based on the literature and from content experts, which served as the basis for the development of the scales and their corresponding items.

Construct Validity. The empirical construct validity of the SSS was examined by addressing the question, To what extent do certain exploratory concepts explain covariation in the responses to the SSS items? (Gable, 1986). To answer this question an analysis was conducted of the data obtained from the administration of the revised form (N=1,111 students from Grades 5, 7, and 9 in four school districts). In addition to the factor analyses described earlier, path analyses and simple correlations were utilized.

Three path analyses were generated to obtain additional interpretative information regarding the constructs measured by the SSS. In addition to the four Sources of Stress scales and the three Manifestations of Stress scales, additional variables were included in the path model on the basis of the literature and previous analyses of SSS pilot data. These variables included gender (Douglas & Rice, 1979; Davidson & Lang, 1960; Pannu, 1974), grade level, grade-level structure (Elkind, 1981; Helms, Gable & Owen, 1985), and perceived family stress (Garmezy, 1983; Hetherington, 1979; Hoffman, 1979).

The causal modeling technique of path analysis was used to test three theoretical models of child stress. The generic, saturated model from which each of the three Manifestations models was derived

is presented in Figure 1. The resulting Manifestations models used the scores on the Manifestation of Stress scales as the outcome variables. The antecedent variables were the four sources of stress, sex of student, grade and grade-level structure, cognitive ability, and perceived family stress. The U in the figures refers to variance unique to the scales. The paths that were not significant ($p < .05$) were deleted, and the resulting revised models were tested against their corresponding full or saturated models by the F test for incremental validity (Land, 1969; Pedhazur, 1982). The resulting trimmed models for each of the three manifestations (emotional, behavioral, and physiological) are presented in Figures 2, 3, and 4, respectively.

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Insert Figure 1 Here

The magnitude of the relationships for each of the manifestation variables was of sufficient size to suggest that the set of antecedent variables would contribute to validity studies of the SSS since they provided a major contribution to explaining the outcome variables. In each case, the family stress and grade and grade-level structure variables were not statistically significant.

In the path analysis, significant relationships were found between sex and each of the three manifestation variables. This evidence indicated that males experienced greater behavioral responses to stress. The relationship between academic self-concept and cognitive ability was consistent with the existing literature regarding self-concept and achievement, which reports that students of the lower achievement levels experience poor self-concept.

The Emotional and Physiological Manifestations models (see Figures 2 and 3) suggest that students experiencing stress as a result of

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Insert Figures 2 and 3 here

academic performance and interactions with classmates and teachers respond either with emotional or physiological symptoms such as frustration, nervousness, or headache. Further, children with lower cognitive ability perceive situations related to academic performance and interactions with their teachers are more stressful. One difference was found between these models. The Emotional Manifestations model suggests that students at a lower achievement level who experience stress linked to academic performance and teacher interactions respond emotionally and experience fewer physiological symptoms in response to the same stressors. It should be noted that the significance of these relationships may be due mainly to the large sample size.

Although academic self-concept is not a direct cause of either manifestation, it was related to each of the three sources of stress (academic stress, peer interactions, and teacher interactions), indicating that students whose academic self-concept is poor may experience stress as a result of any or all of these three situations.

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Insert Figure 4 here

The Behavioral Manifestations model (see Figure 4) indicates that children who experience stress as a result of interactions with their teachers may react by acting out in class or being rude to their teachers. On the other hand, children experiencing stress caused by academic performance may show fewer behavioral symptoms. These

variables, however, had a strong mediating relationship with academic self-concept, suggesting that children who experience either stressor and have a poor self-concept will likely exhibit behavioral symptoms.

Behavioral manifestations of stress were not found to be directly caused by peer interactions. However, academic self-concept appeared to mediate, suggesting that the way a student reacts to stress caused by interactions with classmates is contingent upon the student's academic self-concept. In other words, if self-concept is poor and stressful relationships with peers are encountered, students may react behaviorally by being rude or engaging in verbal attacks.

A comparison of the Behavioral and Emotional models reveals that the strongest causes of emotional manifestations were academic stress and peer interactions, while the strongest cause of behavioral manifestations was teacher interactions. These results are consistent with the finding that boys demonstrate more behavioral manifestations and have more difficulties with teachers, while girls experience more emotional manifestations and are more concerned with academic performance and social relationships with their classmates (Dunn, 1965; Davidson & Lang, 1980; Douglas & Rice, 1979).

Simple correlations were also used to further examine the construct validity of the SSS. The A-Trait scale of the State Trait Anxiety Inventory for Children (STAIC, Spielberger, Edwards, Lushene, Montuori, & Platzek, 1973) was administered to the 1,111 fifth-seventh-, and ninth-grade students during the administration of the revised form. The A-Trait scale, containing 20 items to which students respond on a 3-point Likert scale, assesses relatively stable individual differences in anxiety proneness. High scores indicate a predilection for responding with increased anxiety or

stress to situations perceived as threatening; children whose scores are low respond with less anxiety. High scorers also experience anxiety more frequently and with greater intensity that children whose scores are low because they perceive a wide range of circumstances as dangerous or threatening. This interpretation of student scores is consistent with the definition of stress used in the SSS as the perception of a situation as threatening.

Based upon the general anxiety proneness construct measured by the A-Trait scale of the STAIC, it was hypothesized that significant positive correlations would be found with all seven of the SSS scales. Table 3 presents the resulting correlations which were supportive of the construct validity of the SSS scales.

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Insert Table 3 Here

The highest correlation appeared with the Emotional ($r$=.71) scale, perhaps resulting from the fact that the A-Trait scale contains a number of items pertaining to feelings of anxiety, such as "I feel troubled." The next highest relationships were found with Academic Stress ($r$=.52) and Physiological ($r$=.46), again perhaps due to the similarity in item content between the SSS scales and the A-Trait scale.

Moderate relationships were found between the STAIC scale and the three SSS scales pertaining to more specific stressors: Academic Self-Concept ($r$=.26), Teacher Interactions ($r$=.29), and Peer Interactions ($r$=.33). Each of these scales pertains to school-related stress or anxiety, which contributed to their relationship to the A-Trait's anxiety proneness construct. The SSS items on these scales, however, were more specific than the items contains in the STAIC,

yielding lower levels of relationship that the more general SSS scales identified above.

The Behavioral scale correlated least with the A-Trait scale. Although the correlation of .10 was significant at the .05 level, the significance was largely due to the substantial sample size (N=1,111). This scale includes actions, reactions, or behavior toward others as manifestations of stress. The slight amount of relationship between these two scales may be attributed to this common underlying theme. The lack of a more substantial relationship may be attributed to the fact that the items on the SSS scale are stated in behavioral terms, whereas those on the STAIC scale are stated in terms of affect (that is, feelings).

Norms. To date, the SSS had been administered to more than 7,000 students in the third through twelfth grades in 16 Connecticut and Rhode Island school districts representing rural, suburban, and urban districts. Normative information is available by total group, grade-level cluster (i.e., elementary - Grades 3-5; middle - Grades 6-8; entry high school - Grade 9; high school - Grades 10-12), and sex. Low, medium and high perceived stress levels were created from the distribution of scores in the norm group and use stanines based on a low stanines (1-3) representing 23% of the group, medium stanines (4-6) representing 54%, and the high stanines (7-9) comprising the upper 23% of the normative sample.

## Strategies for Reducing Stress

As a means of finding ways to help stressed students learn to cope, Brenner (1984), Rutter (1983), and others attempted to identify traits displayed by students skilled in coping. They found that such students had caretakers with whom they held a positive, healthy

relationship which gave them affirmation and support. These caretakers or "caregivers" included parents, an older sibling, a relative, or a teacher. Another study revealed that students skilled in coping had successfully overcome pain and stressful episodes in the past (Chandler, 1982).

Brenner (1984) concluded that teachers and school support staff can best help students to cope with stress by (1) enabling them to learn to make friends, and by (2) enabling them to learn to identify and deal with the different kinds of stress. The role of the school guidance counselor and psychologist is essential.

Friendship. For many students, the ability to make friends is second nature, and as Rutter (1983) points out, having someone to turn to can provide strength and support. There are other students, however, who find it difficult to make friends, these are the students who are at high risk and in need of some form of intervention. These students frequently experience stress related to peer interactions and sometimes with teacher interactions.

Students who have no friends usually have learned inappropriate social behaviors that can exacerbate the situation by making those interactions that do occur negative, creating further stress and anxiety. Teachers can help these students by teaching them how to make friends. To accomplish this, a teacher must first observe the student to identify what specifically the student is doing to alienate others. Once identified, the teacher can work with him or her to modify or overcome the behaviors, providing feedback, correcting ineffective behaviors, and rewarding appropriate behaviors. By taking the time to help the student in this way, the teacher engages in a supportive relationship with the students, which serves as a

positive model for other relationships the student may later develop.

## Knowledge of Stressful Situations

Teachers and staff can also help students to deal with stress by informing them of possible stressful situations before they are encountered. For example, an orientation session for students who first enter a new school can alleviate some of the anxiety they face on the first day when, typically, they enter a strange building to face adults and children who are unfamiliar to them. Adolescents encounter a similar experience when they leave elementary school and go on to the middle school or high school.

Teachers can also incorporate discussions of stress into their classroom curriculum. For example, after introducing the subject, the teacher could ask them to role-play situations and to identify those that may be stressful as well as the attendant emotional, behavioral, and physiological symptoms. Once students can recognize a stress reactions and the source, they can begin to learn appropriate and effective mechanisms for coping when these similar situations occur.

Several researchers have described school-based programs for assisting students in identifying stress and developing effective coping mechanisms. In particular, Brenner (1984), Compas (1987), Elias, Gasa, and Ubriaco (1985), and Schultz and Heuchert (1983). The school-based Social Problem Solving Program of Weissberg and Colleagues (Weissberg, 1985; Weissberg & Gesten, 1982; Weissberg, Gesten, Liebenstein, Doherty-Schmid, & Hutton, 1980; Weissberg et al., 1981) is also highly recommended.

## References

Asher, S. (1982, February-March). Some kids are nobody's best friend. Today's Education, 23-29.

Brenner, A. (1984). Helping children cope with stress. Lexington, MA: D. C. Heath.

Chandler, L. A. (1981a). What teachers can do about childhood stress. Phi Delta Kappan, 63 (4), 276-277.

Chandler, L. A. (1981b). Children under stress: Understanding emotional adjustment reactions. Springfield, IL: C. C. Thomas.

Compas, B. E. (1987). Coping with stress during childhood and adolescence. Psychological Bulletin, 101 (3), 393-403.

Davidson, H. H., & Lang, G. (1960). Children's perceptions of their teachers' feelings toward them related to self-perception, school achievement and behavior. Journal of Experimental Education, 29 (2), 107-118.

Douglas, J. D., & Rice, K. M. (1979). Sex differences in children's anxiety and defensiveness measures. Developmental Psychology, 15 (2), 223-224.

Dunn, J. A. (1965). Stability of the factor structure of the Test Anxiety Scale for Children across age and sex groups. Journal of Consulting Psychology, 29 (2), 187.

Elias, M. J., Gasa, M., & Ubriaco, M. (1985). Sources of stress and coping in children's transition to middle school: An empirical analysis. Journal of Clinical Child Psychology, 14 (2), 112-118.

Elkind, D. (1981). The hurried child: Growing up too fast too soon. Reading, MA: Addison-Wesley.

Elliot, G. R., & Eisdorfer, C. (Eds.). (1982). Stress and human health. New York: Springer.

Forman, S. G., & O'Malley, P. L. (1984). School stress and anxiety interventions. School Psychology Review, 13 (2), 162-170.

Gable, R. K. (1986). Instrument development in the affective domain. Boston: Kluwer-Nijoff.

Garmezy, N. (1983). Stressors of childhood. In N. Garmezy & M. Rutter (Eds.), Stress, coping, and development in children (pp. 43-84). New York: McGraw-Hill.

Helms, B. J., & Gable, R. K. (1989). School Situation Survey Manual, Palo Alto, CA: Consulting Psychologists Press.

Helms, B. J., Gable, R. K., & Owen, S. V. (1985, April). Stress in school age children. Paper presented at the Distinguished Paper Session of the annual meeting of the American Educational Research Association, Chicago, IL.

Hetherington, E. M. (1979). Divorce: A child's perspective. AmericanPsychologist, 34 (10), 851-858.

Hoffman, L. W. (1979). Maternal employment: 1979. American Psychologist, 34 (10), 859-865.

Land, K. C. (1969). Principles of path analysis. In E. J. Borgatta (Ed.), Sociological methodology (pp. 3-37). San Francisco: Jossey-Bass.

Moore, T. (1975). Stress in normal childhood. In T. Levi (Ed), Society, stress and disease, Vol. 2. New York: Oxford University Press.

Nunnally, J. C. (1978). Psychometry theory (2nd ed.). New York: McGraw-Hill.

Pannu, P. S. (1974). A conceptual and empirical analysis of anxiety inducing elementary school situations. Unpublished doctoral dissertation, The University of Texas, Austin.

Pedhazur, E. J. (1982). Multiple regression in behavioral research: Explanation and prediction (2nd ed.). New York: Holt, Rinehart & Winston.

Phillips, B. N. (1978). School stress and anxiety: Theory, research and intervention. New York: Human Sciences Press.

Reed, S. (1984, May). Stress: What makes kids vulnerable? Instructor, 93, 28-32.

Rutter, M. (1983). Stress, coping, and development: Some issues and some questions. In N. Garmezy * M. Rutter (Eds.), Stress, coping and development in children (pp. 1-41). New York: McGraw-Hill.

Sarason, I. G. (1975). Test anxiety, attention, and the general problem of anxiety. In C. D. Spielberger & I. G. Sarason (Eds.), Stress and Anxiety, Vol. I. Washington, D.C.: Hemisphere Publishing.

Schultz, E. W. (1980, Fall). Teaching coping skills for stress and anxiety. Teaching Exceptional Children, 12-15.

Schultz, E. W., & Heuchert, C. M. (1983). Child stress and the school experience. New York: Human Sciences Press.

Selye, H. (1974). Stress without distress. Philadelphia, PA: Lippincott & Crowell.

Sieman, M. (1978). Mental health in school-aged children. The American Journal of Maternal Child Nursing, 3 (4), 211-217.

Spielberger, C. D., Edwards, C. D., Lushene, R. E., Montuori, J., & Platzek, D. (1973). Preliminary manual for the State-Trait Anxiety Inventory for Children. Palo Alto, CA: Consulting Psychologists Press.

Spring, B., & Coons, H. (1982). Stress as a predictor ofschizophrenic episodes. In R. W. J. Neufeld (Ed.), Psychological stress and psychopathology. New York: McGraw-Hill.

Weissberg, R. P. (1985). Designing effective social problem-solving programs for the classroom. In B. H. Schneider, K. H. Rubin, & J. E. Ledinbaum (Eds.), Children's peer relations: Issues in assessment and intervention (pp. 225-239). New York: Springer-Verlag.

Weissberg, R. P., & Gesten, E. L. (1982). Considerations for developing effective school-based social problem-solving training programs. School Psychology Review, 11, 56-63.

Weissberg, R. P., Gesten, E. L., Carnrike, C. L., Toro, P. A., Rapkin, B. D., Davidson, E., & Cowen, E. L. (1981). Social problem-solving skills training: A competence building intervention with second to fourth-grade children. American Journal of Community Psychology, 9, 411-423.

Weissberg, R. P., Gesten, E. L., Liebenstein, N. L., Doherty-Schmid, K., & Hutton, H. (1980). The Rochester Social Problem-Solving (SPS) Program: A training manual for teachers of 2nd-4th grade children. 2 : University of Rochester.

Table 1. Alpha coefficients and standard errors of measurement

| Scale | Total Sample | | Grade-Level Cluster | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Grades 3–12 $N = 7,036$ | | Grades 3–5 $n = 567$ | | Grades 6–8 $n = 2,531$ | | Grade 9 $n = 2,331$ | | Grades 10–12 $n = 1,607$ | |
| | Alpha | SEM | Alpha | SEM | Alpha | SEM | Alpha | SEM | Alpha | SEM |
| *Sources of Stress* | | | | | | | | | | |
| Teacher Interactions | .78 | .41 | .81 | .36 | .79 | .36 | .74 | .37 | .80 | .33 |
| Academic Stress | .73 | .58 | .71 | .57 | .73 | .53 | .70 | .55 | .78 | .46 |
| Peer Interactions | .68 | .39 | .76 | .35 | .72 | .34 | .63 | .36 | .69 | .31 |
| Academic Self-Concept | .73 | .39 | .70 | .38 | .73 | .35 | .69 | .37 | .78 | .32 |
| *Manifestations of Stress* | | | | | | | | | | |
| Emotional | .80 | .35 | .79 | .33 | .79 | .33 | .78 | .33 | .83 | .31 |
| Behavioral | .75 | .38 | .78 | .31 | .75 | .33 | .73 | .33 | .76 | .33 |
| Physiological | .68 | .50 | .75 | .42 | .66 | .44 | .66 | .45 | .73 | .41 |

*Note:* These data were obtained from 16 Connecticut and Rhode Island schools, representing rural, suburban, and urban districts.

**Table 2.** Test-retest data

| Scale | Reliability |
|---|---|
| *Sources of Stress* | |
| Teacher Interactions | .71 |
| Academic Stress | .67 |
| Peer Interactions | .69 |
| Academic Self-Concept | .62 |
| *Manifestations of Stress* | |
| Emotional | .65 |
| Behavioral | .67 |
| Physiological | .61 |

*Note:* This sample was based on 621 seventh- through ninth-grade students over a 3-week interval. While all correlations are significant at the $p < .01$ level, emphasis is placed on the magnitude of the coefficients.

**Table 3.** Correlations of the SSS scales with the A-Trait scale of the STAIC

| Scale | Correlation to STAIC |
|---|---|
| *Sources of Stress* | |
| Teacher Interactions | .29 |
| Academic Stress | .52 |
| Peer Interactions | .33 |
| Academic Self-Concept | .26 |
| *Manifestations of Stress* | |
| Emotional | .71 |
| Behavioral | .10 |
| Physiological | .46 |

*Note:* All correlations were significant at the $p < .05$ level, partly due to the large sample size. Emphasis should be placed on the magnitude of the coefficients in light of the theory underlying the SSS and STAIC scales.

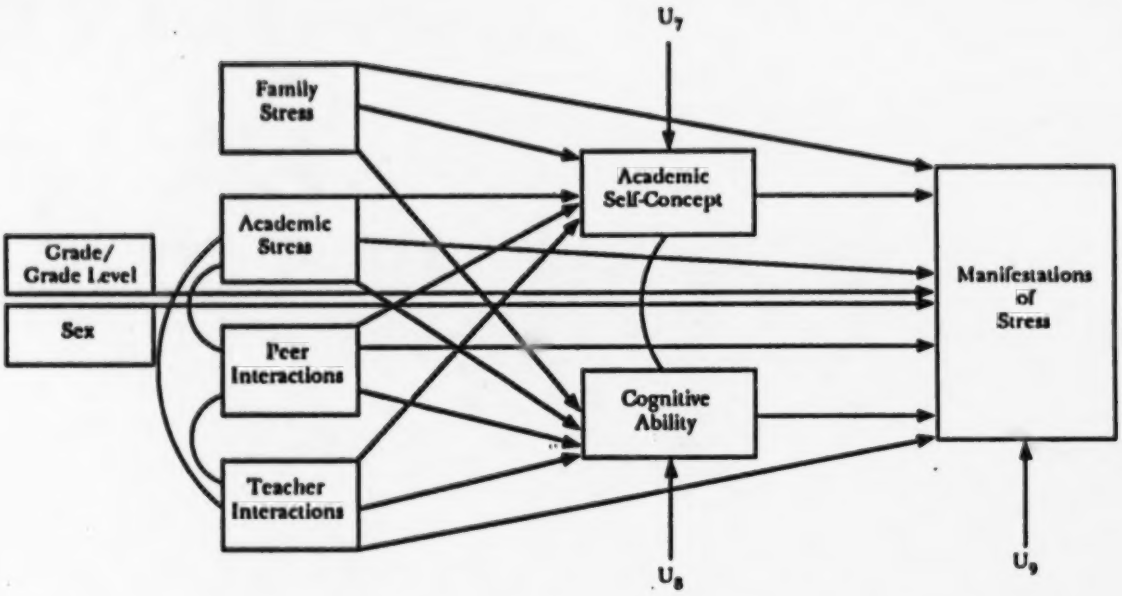


**Figure 1.** Proposed model of child stress

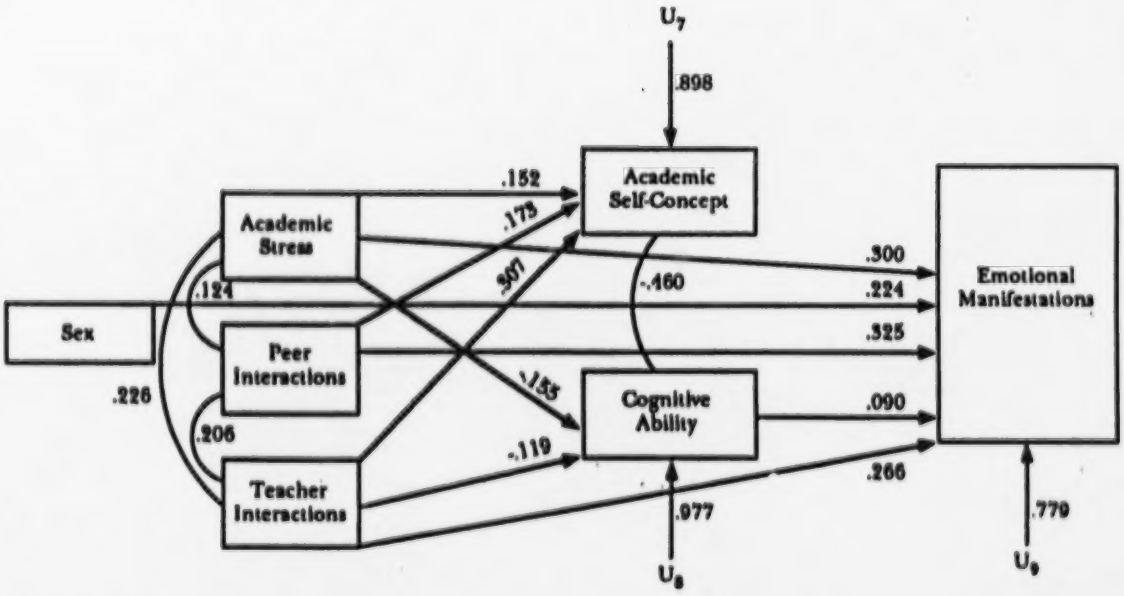


**Figure 2.** Seven-variable trimmed model for explaining emotional manifestations of stress

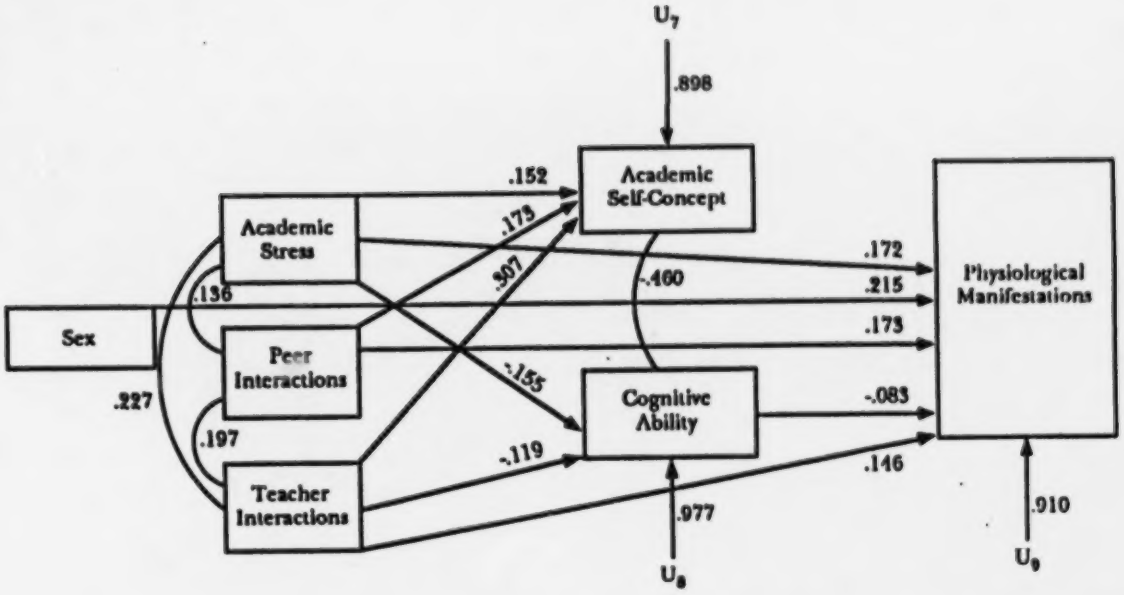


**Figure 3.** Seven-variable trimmed model for explaining physiological manifestations of stress

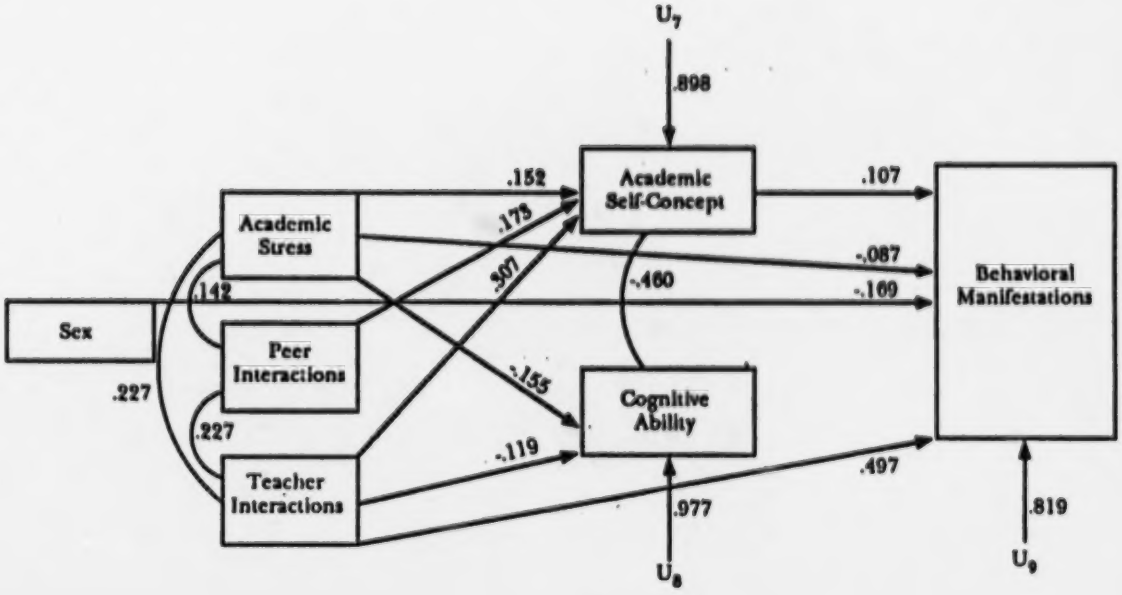


**Figure 4.** Seven-variable trimmed model for explaining behavioral manifestations of stress